

REMARKS

Amendments

Claims 1 and 10 are amended to recite that component B contains is at least one multifunctional organic compound with at least two functional groups selected from -OH, -NH₂, -COOH, and their reactive derivatives, capable of reacting with said at least one organic amine derivative of component A to form a crosslinked polymer. See, e.g., the paragraph bridging pages 16-17. Also, claims 10, 11, 19, and 40 are amended to recite that the upper limit of component B is 25%. See, e.g., page 18, line 2. New claim 44 recites specific compounds for component B. See page 17, lines 2-4.

These amendments do not require further additional burdensome search and/or consideration. Moreover, the amendments place the application in condition for allowance. Entry of the amendments is respectfully requested.

Rejection under 35 USC 103(a) in view of Chen et al. and Knudsen et al.

Claims 1-17, 21-30, 33, and 38-43 are rejected as allegedly being obvious in view of Chen et al. (US 5,330,840) in combination with Knudsen et al. (US 2002/0176989). This rejection is respectfully traversed.

Chen et al. disclose a melamine-cured polyurethane coating composition described as being useful for manufacturing toner fusing members. The polyurethane is the polycondensation product of a C₂₋₂₀ diol, a monomeric diisocyanate, and an organopolysiloxane diol having a siloxane backbone, pendant alkyl, vinyl, and/or phenyl groups, and terminal hydroxyalkylene groups. See the disclosure at column 3, lines 4-21.

The coating composition comprises a crosslinked block copolymer product of the polyurethane block copolymer and the melamine resin. As noted in the rejection, Chen et al. disclose that the melamine resins, Cymel-303, Cymel-380, and Cymel-385, can be used as crosslinking agents. The reactive sites on the polyurethane block copolymer for reacting with the melamine crosslinking agents are “predominately hydroxyl groups located on the endcapping diol units.” See column 5, lines 61-64 and column 6, lines 59-63.

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Curing of the coating composition is achieved through the use of an acid catalyst such as trifluoroacetic acid. The acid catalyst is used in an amount of 0.001%-1.0% of the solids in the formulation. See column 7, lines 1-6.

Chen et al. disclose forming a coating solution for use in applying the coating composition to a substrate, i.e., a fusing belt. The coating solution contains a solvent like THF, the polyurethane/polysiloxane block copolymer, the melamine resin, and a catalyst for reacting the terminal diol groups of the polyurethane/polysiloxane block copolymer with the reactive sites of the melamine resin. See column 6, lines 55-63.

As noted above, the coating composition contains a melamine resin and a polyurethane/polysiloxane block copolymer that is reacted with the melamine resin. The polyurethane/polysiloxane block copolymer contains a significant amount of siloxane units, due to the use of an organopolysiloxane diol in the manufacture of the block copolymer. As a result of this significant amount siloxane, one skilled in the art would not characterize the block copolymer as a multifunctional organic compound. Compare applicants' component B as recited in claims 1 and 10. Thus, the coating composition of Chen et al. does not suggest a composition containing components A and B as recited in applicants' claims.

As noted in the rejection, Chen et al. do not disclose an electronic device comprising at least one dielectric layer formed from the coating composition described by Chen et al. In fact, Chen et al. provide no disclosure regarding the dielectric properties of layers formed from the coating composition. For example, there is no disclosure of the dielectric constant or resistivity of layers formed from the coating composition.

In the rejection, it is asserted that Knudsen et al. disclose the use of cross-linked polyurethane material as a dielectric layer, citing the abstract, paragraph [0031], and paragraph [0051]. The abstract of Knudsen et al. describes a dielectric that is composed of a core material positioned between two polymer layers and can be used in a capacitor. These polymer layers are said to "provide structural integrity for the dielectric." Paragraph [0031] refers to a "dielectric laminate" being placed on a substrate. The dielectric laminates are described in paragraph [0028] as having a core dielectric material between two dielectric polymer layers.

In paragraph [0051], Knudsen et al. refer to an extremely wide variety of polymeric

materials that can be used in the dielectric laminate. Thus, Knudsen et al. disclose that the polymer materials can be:

“polyesters, polystyrene, high impact polystyrene, styrene-butadiene copolymers, impact modified styrene-butadiene copolymer, poly-.alpha.-methyl styrene, styrene acrylonitrile copolymers, acrylonitrile butadiene copolymers, polyisobutylene, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetals, polyacrylonitrile, alky polyacrylates, alky polymethacrylates, polybutadiene, ethylene vinyl acetate, polyamides, polyimides, polyoxymethylene, polysulfones, polyphenylene sulfide, polyvinyl esters, melamines, vinyl esters, epoxies, polycarbonates, polyurethanes, polyether sulfones, polyacetals, phenolics, polyester carbonate, polyethers, polyethylene terephthalate, polybutylene terephthalate, polyarylates, polyarylene ethers, polyarylene sulfides, polyether ketones, polyethylene, high density polyethylene, polypropylene, and copolymers, grafts, blends, and mixtures thereof.”

It is evident that this is a vast grouping of polymers. It is noted that polyurethanes are included within this extremely broad genus. Yet, the rejection presents no rationale as to why one of ordinary skill in the art would select polyurethanes from this extremely broad genus encompassing a seemingly infinite number of species. **But more importantly, polysiloxanes are not included with this vast group of polymers.**

In the rejection, it is **not** asserted that it would be obvious to modify the composition of Chen et al. in view of the disclosure of Knudsen et al. Instead, it is alleged that obvious to use the composition of Chen et al. in the device of Knudsen et al. Thus, it is unclear from the rejection which reference is the primary reference and which is the secondary reference.

In any event, as noted the rejection asserts that it would be obvious to use the coating composition of Chen et al. in the dielectric laminate of Knudsen et al. The rationale for this modification is that the composition of Chen et al. has “excellent flexibility, adhesion to a metal surface and low dielectric constant.” However, Chen et al. make no mention of the dielectric properties of their coating composition.

Furthermore, the rejection presents no rationale as to why one of ordinary skill in the art would look to art dealing with the manufacture of fusing members in electrophotographic copying processes in order to modify the manufacture of dielectric materials for use in electronic components such as capacitors. In addition, in view of the extremely large class of polymeric materials described by Knudsen et al., no rationale is presented in the rejection as to why one of ordinary skill in the art would go to a material outside of this vast genus, namely a polyurethane/polysiloxane copolymer, for selecting a material for use in the dielectric laminate, especially when the reference disclosing the polyurethane/polysiloxane makes no mention of its dielectric properties.

The rejection also asserts that Chen et al. disclose the use of 1,4-butanediol. It is correct that 1,4-butanediol is listed in the Table as the short-chain diol of Examples 3 and 4. However, this diol is used in the manufacture of the polyurethane/polysiloxane block copolymer. It is not utilized as an agent capable of cross-linking with the melamine resin. As discussed above, it is the polyurethane/polysiloxane block copolymer (not a starting material thereof) that undergoes cross-linking with the melamine resin. Compare applicants' claims 29 and 40.

It is also asserted that it would be obvious to add ceramics to the coating composition of Chen et al. to enhance its dielectric properties. But, there is no indication in the Chen et al. disclosure that it would be desirable to enhance the dielectric properties of its composition for coating fusing members.

The assertion that the Chen et al. composition has the same dielectric properties as applicants' claimed composition is unfounded. As discussed above, applicants' composition is neither disclosed nor suggested by the disclosure of Chen et al.

In view of the above remarks, it is respectfully submitted that Chen et al., taken alone or in combination with Knudsen et al., fails to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Rejection under 35 USC 103(a) in view of Chen et al., Knudsen et al., and Baranczyk et al.

Claims 31-37 are rejected as allegedly being obvious in view of Chen et al. (US 5,330,840) in combination with Knudsen et al. (US 2002/0176989) and Baranczyk et al. (US

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2004/0044165). This rejection is respectfully traversed.

The disclosures of Chen et al. and Knudsen et al. are discussed above. Barancyk et al. is relied on in the rejection for disclosure of para-toluene sulphonic acid as a catalyst, butanol and ketones as solvents, and polyoxyethylene as a surfactant.

However, the disclosure of Barancyk et al. does not overcome the discrepancies discussed above with respect to the combination of Chen et al. and Knudsen et al. For example, none of the references suggest a component in accordance with applicants' component B.

In view of the above remarks, it is respectfully submitted that Chen et al., taken alone or in combination with Knudsen et al. and/or Barancyk et al., fails to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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